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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

Amendment of Part 2 of the Commission's Rules to Allocate the 455-456 MHz and 459-460 MHz bands to the Mobile-Satellite Service	))))	ET Docket No. 97-214

REPLY COMMENTS OF THE NATIONAL ASSOCIATION OF BROADCASTERS

NATIONAL ASSOCIATION OF BROADCASTERS

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SUMMARY

Consistent with the position taken by the National Association of Broadcasters ("NAB") in its initial comments in this proceeding, we strongly oppose the spectrum reallocation to Little LEO operations as has been proposed by the Commission. Such a spectrum reallocation would cause severe harm to the important remote pickup operations that are critical to broadcast stations' local service.

Several other parties -- broadcasters and other users of this spectrum band -- also have filed comments supporting the same proposition that was central to NAB's initial comments: spectrum reallocation for Little LEO operation would cause devastating interference to the service of other users of this spectrum band.

An analysis of the comments filed by Little LEO proponents reveals no evidence that such interference to incumbent users' operations would not occur. Indeed, many of the Little LEO proponents' comments actually serve to *support* the notion that such interference would occur.

Moreover, the results of both the WRC 95 and WRC 97 international conferences -- wherein interference-avoidance requirements were imposed and global spectrum reallocation was rejected -- suggest that domestic reallocation of these frequency bands to Little LEO operation would be unwise and at least premature.

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I. INTRODUCTION AND SUMMARY

On December 1, 1997, the National Association of Broadcasters ("NAB")[1] responded[2] to several of the proposals embodied in the Commission's *Notice of Proposed Rule Making* in the above-captioned proceeding.[3] Today we reply to many of the parties who also have submitted initial comments in this proceeding.[4]

This Commission rule making proposes to reallocate the 455-456 MHz and 459-460 MHz bands to the so-called "Little LEO ('Low Earth Orbit')" satellite service for

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[1] NAB is a nonprofit, incorporated association of television and radio stations and networks which serves and represents the American broadcast industry.

[2] Comments of NAB in ET Docket No. 97-214, filed December 1, 1997.

[3] *Notice of Proposed Rule Making* in ET Docket No. 97-214 ("*Notice*"), ___ FCC Rcd ____ (1997), 62 Fed. Reg. 58932 (October 31, 1997).

[4] The Commission's *Notice* established last Monday, December 15, 1997, as the original deadline for the filing of reply comments in this proceeding. Section 1.46 (b) of the Commission's Rules states that any request for an extension of time in a notice-and-comment rule making must, in all but "emergency situations," be filed at least seven days prior to the reply comment deadline. By *Order* of December 12, 1997, the Chief of the FCC's Office of Engineering and Technology extended the reply comment date in response to a request submitted the same day by Leo One USA Corporation ("Leo One"). Leo One based its request on the assertion that "...due to technical problems [in the FCC records system] a significant number of comments [filed in this proceeding] were not available until December 8th." Though NAB became informed of the FCC extension of time and did not file on December 15th, we observe that the FCC *Order* was acknowledged in the December 16, 1997, FCC *Daily Digest*, one day *after* reply comments originally were required to be filed. We further note that Leo One had information about the records reproduction problem (which NAB also experienced) in time for it to have filed its extension request seven days before the reply deadline.

operation on a co-primary basis with incumbent users of these bands. As explained thoroughly in our initial comments, NAB strongly opposes the reallocation of the 455-456 MHz band -- a band currently used heavily for "remote pick-up" purposes by broadcast stations -- to Little LEO co-primary operation. These remote pickup stations are licensed pursuant to Part 74 of the Commission's Rules and play an integral role in the local service of broadcast stations.

NAB's initial comments pointed out that, based on a fundamental technical analysis, such a spectrum reallocation, conforming to the technical parameters spelled out in the *Notice*, would threaten the service provided by broadcasters' remote pick-up operations. Such a result, we underscored, would be consistent with neither the United States international obligations nor with fundamental concepts of rational spectrum allocation policy.

Our comments focused on the fact that the proposed Little LEO operation in the 455-456 MHz band would, in effect, take on the characteristics of *continuous* transmissions, insofar as interference to broadcast auxiliary operations is concerned. We emphasized how this interference would be particularly acute in those typical situations where a station is airing broadcast auxiliary facility-delivered programming "live," and especially where broadcast auxiliary communications were occurring between aircraft and broadcast studios.

Similar criticism of the FCC's plan was echoed by a variety of parties -- ranging from broadcasters to several classes of fixed users currently employing these frequencies. These parties share our view that the sharing of such frequencies with Little LEO operations simply is not workable.

Several broadcast interests filed comments that skillfully articulate how Little LEO operations would cause devastating interference to RPU facilities and thoroughly

refute the suggestion that there is a rational technical means for achieving spectrum sharing that would not cause such RPU injury.[5] Several parties with interests in in-flight telephone air-to-ground communications systems operating in the 459.665-459.985 MHz band took a similar position in initial comments.[6] Parties representing land mobile and fixed operations in these frequency bands also expressed additional opposition. Their opposition was based, as well, on concerns over interference.[7]

II. THE LITTLE LEO COMMENTS DO NOT REFUTE -- AND INDEED SUPPORT -- THE NOTION THAT INTERFERENCE TO RPU OPERATIONS WOULD RESULT FROM LITTLE LEO USE OF THESE FREQUENCIES.

A number of Little LEO proponents also filed initial comments in this proceeding. However, these parties' comments do nothing to dispel the notion that highly destructive interference to RPU facilities would be the consequence of Little LEO spectrum sharing in the 455-456 MHz band. Indeed, the Little LEO comments actually support the proposition that such interference *will* occur.

In its comments, Leo One argues that broadcast remote pick-up operators would be able to employ directional or higher gain antennas in order to reduce interference from

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[5] *See, e.g.,* Comments of the University of California (licensee of noncommercial radio stations); Comments of Chancellor Media Corporation; Comments of ABC, Inc.; Comments of Lewis Downey, Chief Engineer, Station KUER, Salt Lake City, Utah; Comments of Thomas Smith; and Comments of Bill Jones, Broadcast Engineering.

[6] *See, e.g.,* Comments of Great Dane Power Equipment, Inc.; Comments of USA Insurance Group, Inc.; and Comments of Manitoba Corporation.

[7] *See, e.g.,* Comments of the American Petroleum Institute; Comments of UTC, The Telecommunications Association; and Comments of the Land Mobile Communications Council.

455-456 MHz Little LEO uplinks.[8] It is true that in many cases broadcasters can and do employ directional antennas with their RPU equipment. However, in many other cases, such as when RPU equipment is used in aircraft, highly directional antennas are not a practical option. In deciding whether or not to allocate the 455-456 MHz band for Little LEO use, the Commission cannot rely upon potential use of directional antennas by broadcasters as a legitimate reason why Little LEO interference to broadcast RPUs might be minimized.

On the subject of Little LEO interference to terrestrial spectrum users, Orbital Communications Corporation (ORBCOMM) says in its comments:

> "Under the international allocation, the Little LEO systems are obligated to avoid harmful interference to the terrestrial users. Thus, to the extent that there is significantly greater usage by the terrestrial users in [the 455-456 and 459-460 MHz] bands as opposed to the 148-149.9 MHz band, the Little LEO systems bear the risk that a sufficient number of unoccupied subscriber uplink channels will be available."[9]

However, in order to permit Little LEO systems to operate in the 148-149.9 MHz band, several restrictions had to be placed on the existing, terrestrial service in that band. In light of this fact, it seems unrealistic for the Little LEO proponents -- or the Commission -- to assume that Little LEO systems could share the 455-456 MHz RPU band without causing severe, negative impacts on the existing terrestrial service in this band.

There is no evidence in the record of this proceeding that provides any insight into the success or failure of the spectrum sharing between Little LEO systems and terrestrial users in the 148-149.9 MHz band. This spectrum is allocated exclusively to the federal government for terrestrial use, and it is shared between federal government and non-

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[8] Comments of Leo One at n.13.
[9] Comments of ORBCOMM at 9.

federal government users for mobile satellite use.[10] Because it is the federal government that is using this spectrum terrestrially, the types of uses and the number of systems in use are not a matter of public record. It is evident that the Commission coordinated its allocation of the 148-149.9 MHz band for Little LEO use with the National Telecommunications and Information Administration (NTIA), which is responsible for managing the federal government's use of the radio spectrum.[11] It is also evident that the Commission had to place a number of restrictions on the terrestrial users of this spectrum in order to accommodate Little LEOs. Examples of the restrictions now imposed on federal users of this spectrum, and the implications for RPU users, are provided below.

- Any terrestrial government stations in the 148-149.9 MHz band that increase their effective isotropic radiated power (EIRP) to more than 27 dBW (500 watts) must coordinate their new or modified facilities with the Little LEO space stations that are also using this spectrum.[12]

In this regard we note that RPU transmitters in the 455-456 MHz band are limited to a maximum transmitter *output* power of 100 watts.[13] As observed earlier in these reply comments, many commonly-used RPU antennas are very directional and provide a substantial amount of gain. For example, the YC-450 from Marti Electronics provides 10 dB of gain, and can provide up to 13 dB of gain with an optional stacking harness. A 100-watt RPU signal into an antenna with 13 dB of gain results in an EIRP of 2,000 watts. Furthermore, because the Commission's rules limit the output power of RPU transmitters, not their EIRP,

[10] *See* 47 CFR Section 2.106.
[11] *Report and Order* in ET Docket 91-280, 8 FCC Rcd 1812 (1993) at 17.
[12] *See* 47 CFR Section 2.106, footnote US325.
[13] *See* 47 CFR Section 74.461.

there is *no limit* on the amount of gain that an RPU transmitting facility might employ.

In light of the fact that Little LEO operators in the 148-149.9 MHz band require terrestrial operators in that band to coordinate their 500 watt-plus transmitters with the Little LEO operations, we question the claims made by the Little LEO proponents that they will be able to operate in the 455-456 MHz RPU band without requiring *any* restrictions on the use of RPU units that might have EIRPs of several kilowatts. Even considering the additional attenuation at the higher RPU frequencies, we find their assertion hard to believe.

- In addition to the power restrictions placed on terrestrial users in the 148-149.9 MHz band, there is also a bandwidth restriction to accommodate Little LEO operations. To protect the Little LEO systems, federal government transmitters in this spectrum that have bandwidths in excess of 38 kHz must be coordinated with the Little LEO systems.[14] Here again, we question the ability of Little LEO systems to share the 455-456 MHz band without impacting broadcast use of this spectrum; broadcast RPU systems are permitted to transmit with bandwidths of up to 100 kHz.[15] Furthermore, we note that the Commission had to obtain an agreement from the federal users in the 148-149.9 MHz band not to employ any new narrowband transmissions in this band without first coordinating their use with the Commission.[16]

Clearly, Little LEO systems have not been able to share the 148-149.9 MHz band without significantly impacting the terrestrial users of this spectrum. We believe that this

[14] *See* 47 CFR Section 2.106, footnote US325.
[15] *See* 47 CFR Section 74.402(d).
[16] *See Report and Order* in ET Docket No. 91-280, 8 FCC Rcd 1812 (1993) at n. 19.

also would be the case in the 455-456 MHz RPU band. Consequently, it appears impossible for Little LEO systems to share this band with broadcast RPU operations and still comply with the requirements of the international footnotes that the Commission proposes to add to the frequency table in its *Notice*.[17]

If Little LEO uplinks were allowed to operate in the 455-456 MHz band, they would not only require that terrestrial use of this spectrum be constrained, but they would also cause interference to terrestrial broadcast RPU operations. We provided an explanation of the tremendous potential for interference to RPU operations in our initial comments in this proceeding.[18] In its comments, ORBCOMM claims that "terrestrial users ... bear no risk because the Little LEO operators are required by the international allocation to avoid harmful interference, and not to constrain the terrestrial operations."[19] This is hardly the case. As the Commission is well aware, a rule against causing interference to users of the radio spectrum by no means guarantees that, in practice, this interference will not occur. In fact, this is a principal reason for the existence of the Commission's Compliance and Information Bureau (CIB). While deciding what action to take in this proceeding, the Commission should consider what actions the CIB would be able to take if millions of Little LEO uplink transmitters were deployed across the country and cumulatively caused interference to broadcast RPU operations.

There has been no evidence entered into the record in this proceeding to support the conclusion that Little LEO uplink transmitters will not cause interference to broadcast RPU operations. All that exists are unsubstantiated claims by Little LEO proponents that such interference *might* not occur. For example, ORBCOMM says that its "own experience with sharing spectrum with terrestrial users indicates that such sharing *might*

[17] See *Notice* at Appendix A, proposed international footnotes S5.286B and S5.286C.
[18] Comments of NAB at 2-5.
[19] Comments of ORBCOMM at 9.

also take place in the 455-456 MHz and 459-460 MHz bands."[20] [Emphasis added.] And Final Analysis says that it "has conducted extensive analyses of spectrum-sharing and coordination techniques to facilitate commercial Little LEO operations in bandwidth shared with *government satellite constellations*. Based on this experience, [it] believes that sharing between Little LEO operations and fixed and mobile service operations in the 455-456 MHz and 459-460 MHz bands is feasible."[21] [Emphasis added.]

The suggestion by a few Little LEO proponents that millions of Little LEO uplinks *might* be able to share the 455-456 MHz band with broadcast RPU operators is not enough to warrant reallocation of this spectrum. Furthermore, any evidence regarding the alleged ability of Little LEO operations to share spectrum with "government satellite constellations" has very little relevance when it comes to determining the ability of Little LEO systems to share spectrum with broadcast RPU operations. As the numerous comments from broadcasters in this proceeding illustrate, there is tremendous potential for significant levels of harmful interference to RPU operations from Little LEO uplinks in this band.

Perhaps the Little LEO proponents' optimism stems from their misunderstanding of the service provided by RPU facilities. For example, in its comments, ORBCOMM says that its network "approximately every four to six seconds" updates the status of frequencies available to its Little LEO uplinks.[22] This means that a multitude of Little LEO uplink transmissions could interfere with an RPU transmission for "approximately four to six seconds" every time an RPU link is activated, if it is assumed that ORBCOMM's timing figures are correct. This is enough of a duration for interference to

[20] *Id.* at 7.
[21] Comments of Final Analysis at 5.
[22] Comments of ORBCOMM at 7.

wipe out a significant portion of a traffic report, a news report or any other live broadcast from the field. Such a result clearly is unacceptable.

While the Commission should strive to prevent *all* types of radio frequency interference, it is worth noting that *some* types of communications are more easily able to recover from interference than are others. For example, a data communications system such as the one being contemplated by the Little LEO proponents in this proceeding is capable of simply retransmitting blocks of information that are lost due to interference. In this manner, the interference is transparent to the users of the communications system. It may slightly delay their reception of some remote metering data, an email message or whatever other communication they are receiving; but the information ultimately arrives intact.

This is *not* the case, however, for broadcast remote pickup transmissions. In many cases these signals are being transmitted live, in real time, over the broadcaster's main program channel. If an RPU receiver is subjected to interference, that interference impacts station listeners immediately – and there is no way to go back in time and correct it. It is therefore more appropriate for Little LEO systems to share spectrum with other systems that, like them, are capable of withstanding occasional interruptions in service without seriously impacting their users.

Again, to avoid interference to broadcast RPU operations throughout the United States, the Commission simply should decline to reallocate the 455-456 MHz band for use by Little LEO uplinks. This also would be the result most congruent with recent international negotiations.

III. INTERNATIONAL CONSIDERATIONS ALSO SUPPORT FCC REJECTION OF SPECTRUM REALLOCATION TO LITTLE LEO OPERATION.

As we pointed out in our initial comments, the spectrum reallocation being proposed by the Commission in this proceeding is based on the results of the 1995 World Radiocommunication Conference.[23] Footnote S5.286B of the *Final Acts* requires that any MSS stations in these bands not cause harmful interference to, or claim protection from, fixed or mobile services, such as existing broadcast auxiliary operations. Furthemore, Footnote S5.286C of the *Final Acts* mandates that these MSS operations "not constrain" the development and use of these frequencies by fixed and mobile services.

The plain meaning and significance of these WRC 95 *Final Acts* provisions is that any Little LEO use of the 455-456 MHz band must be on an effectively "secondary" basis -- clearly *not* on the kind of co-primary basis contemplated in the Commission's *Notice*. However, the well-documented threat of interference to broadcast auxiliary services from such spectrum sharing with Little LEO facilities is so serious that it mandates a Commission abandonment of *all* plans for *any* allocation of the 455-456 MHz band for Little LEO operation in this country. This is a conclusion not confined to observers in the United States.

At the recently concluded World Radiocommunication Conference (WRC 97) in Geneva, Switzerland, Little LEO proponents completely failed to obtain worldwide support for the use of the 455-456 MHz band for their operations. Indeed, the WRC 97 conferees also rejected any global allocation of the 459-460 MHz band for Little LEO

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[23] *See Final Acts of the World Radiocommunication Conference (WRC-95) Geneva, 1995 (ITU 1996) ("Final Acts").*

operation. Little LEO interests did, however, obtain an additional "regional" allocation of the 454-455 MHz band, which is immediately below the RPU spectrum which is one of the subjects of the instant rulemaking proceeding.

Though Little LEO proponents either have ignored or put an unrealistic "spin" on the outcome of WRC 97, it is clear that the results of this international convention provide yet further justification for the Commission to reject this domestic 455-456 MHz reallocation proposal for Little LEOs. The WRC 99 preliminary agenda lists a possible raising of 138-470 MHz frequency allocations issues at that conference. However, this tenuous possibility should not be the basis of near-term domestic spectrum reallocation action by the Commission. Now that the FCC has received a full record in this proceeding, and similarly has the results of WRC 97 to digest, the agency now has enough information upon which it can base a decision not to reallocate to Little LEO operations those frequencies that are critical to broadcast remote pickup operations. To do otherwise would be to ignore the record and all other relevant facts.

IV. CONCLUSION

For the reasons stated above, we believe that the potential for 455-456 MHz Little LEO satellite operations to interfere with auxiliary broadcast operations is too great to permit an allocation of this spectrum for this purpose in the United States. We urge the Commission to reject this proposal.

Respectfully submitted,

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